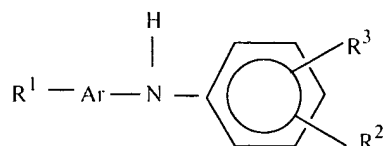


WHAT IS CLAIMED IS:

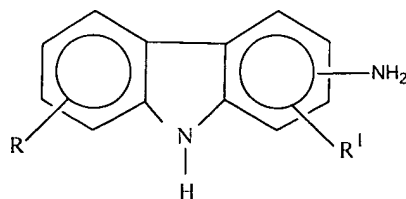
1. A diesel fuel composition comprising an effective amount of soot dispersant additive which is a copolymer of ethylene and a C<sub>3</sub> - C<sub>10</sub> alpha-monoolefin having a number average molecular weight ranging from about 5,500 to about 60,000 on which  
 5 has been grafted an ethylenically unsaturated carboxylic acid and/or anhydride thereof in the ratio of at least about 1.8 molecules of carboxylic acid functions per molecule of said copolymer which is then further derivatized with at least one amino-aromatic polyamine compound selected from the group consisting of:

(a) N-arylphenylenediamine of the formula:



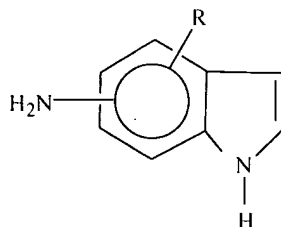
10 wherein Ar is aromatic and R<sup>1</sup> is H or -NHaryl, -NHarylalkyl, a branched or straight chain radical having from 4 to about 24 carbon atoms that can be alkyl, alkenyl, alkoxy, aralkyl alkaryl, hydroxyalkyl or aminoalkyl; R<sup>2</sup> is -NH<sub>2</sub>, -[NH(CH<sub>2</sub>)<sub>n</sub>]-NH<sub>2</sub>, -CH<sub>2</sub>-(CH<sub>2</sub>)<sub>n</sub>-NH<sub>2</sub>, -CH<sub>2</sub>-aryl-NH<sub>2</sub>-aryl-NH<sub>2</sub> in which n and m each independently has a value  
 15 of from 1 to about 10; and, R<sup>3</sup> is H or an alkyl, alkenyl, alkoxy, aralkyl or alkaryl radical having from 4 to about 24 carbon atoms,

(b) aminocarbazole of the formula:



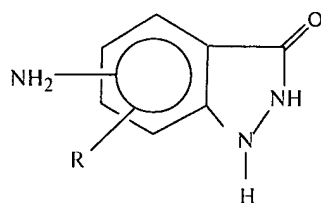
wherein R and R<sup>1</sup> each independently represents H or an alkyl or alkenyl radical having from 1 to about 14 carbon atoms,

(c) aminoindole of the formula:



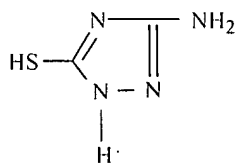
5 wherein R represents H or an alkyl radical having from 1 to about 14 atoms,

(d) amino-indazolinone of the formula:



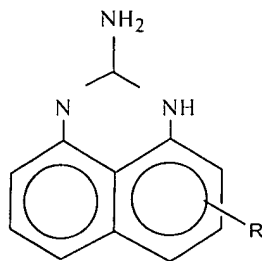
wherein R is H or an alkyl radical having from 1 to about 14 carbon atoms,

(e) aminomercaptotriazole of the formula:



10 , and

(f) aminoperimidine of the formula:



wherein R represents H or an alkyl radical having from 1 to about 14 atoms.

2. The diesel fuel composition of Claim 1, wherein the copolymer is obtained by copolymerizing ethylene, C<sub>3</sub>-C<sub>10</sub> alpha-monoolefin and at least one member selected from the group consisting of nonconjugated diene and nonconjugated triene.

5            3. The diesel fuel composition of Claim 1, wherein the C<sub>3</sub>-C<sub>10</sub> alpha-monoolefin is propylene.

4. The diesel fuel composition of Claim 2, wherein the C<sub>3</sub>-C<sub>10</sub> alpha-monoolefin is propylene.

10

5. The diesel fuel composition of Claim 1, wherein the ethylenically unsaturated carboxylic acid anhydride is maleic anhydride.

6. The diesel fuel composition of Claim 4, wherein the ethylenically unsaturated  
15 carboxylic acid anhydride is maleic anhydride.

7. The diesel fuel composition of Claim 1, wherein the at least one amino-aromatic polyamine compound is an N-arylphenylenediamine.

20            8. The diesel fuel composition of Claim 7, wherein the N-arylphenylene-diamine is N-phenyl-p-phenylenediamine.

9. The diesel fuel composition of Claim 1, wherein the ethylenically unsaturated carboxylic acid and/or anhydride thereof is grafted onto the copolymer in a ratio of from about 1.8 to about 5 molecules per molecule of copolymer.

5           10. The diesel fuel composition of Claim 1, wherein the ethylenically unsaturated carboxylic acid and/or anhydride thereof is grafted onto the copolymer in a ratio of from about 2.25 to about 4 molecules per molecule of copolymer.

          11. The diesel fuel composition of Claim 1, wherein the number average  
10   molecular weight of the copolymer is from about 6,000 to about 20,000.

          12. The diesel fuel composition of Claim 1, wherein the number average  
molecular weight of the copolymer is from about 7,000 to about 15,000.

15           13. The diesel fuel composition of Claim 1, wherein the amino-aromatic polyamine compound is reacted with the copolymer containing the grafted carboxylic acid function in a ratio of about 0.5:1 to about 1.1:1 molar equivalence of amino-aromatic polyamine compound to copolymer containing the grafted carboxylic acid function.

20           14. The diesel fuel composition of Claim 1, wherein the amino-aromatic polyamine compound is reacted with the copolymer containing the grafted carboxylic acid function in a ratio of about 0.9:1 to about 1:1 molar equivalence of amino-aromatic polyamine compound to copolymer containing the grafted carboxylic acid function.

15. The diesel fuel composition of Claim 1, wherein the copolymer is obtained by copolymerizing ethylene and propylene, the copolymer is grafted with maleic anhydride to provide carboxylic acid function and the grafted copolymer is reacted with N-phenyl-p-phenylenediamine.

5

16. The diesel fuel composition of Claim 1, wherein the diesel fuel contains less than about 500 parts per million of sulfur.

17. The diesel fuel composition of Claim 1, wherein the effective amount of the  
10 soot dispersant additive is about 50 parts per million (ppm) to about 5,000 ppm.

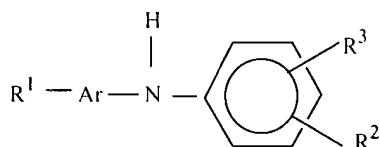
18. The diesel fuel composition of Claim 1, wherein the effective amount of the soot dispersant additive is from about 100 to about 2,000 ppm.

15 19. The diesel fuel composition of Claim 1, containing at least one other diesel fuel additive.

20. The diesel fuel composition of Claim 1, containing at least one other diesel fuel additive selected from the group consisting of other soot dispersant additives,  
20 detergents, cetane improvers, antioxidants, carrier fluids, metal deactivators, dyes, markers, corrosion inhibitors, biocides, antistatic additives, drag reducing agents, demulsifiers, dehazers, anti-icing additives, lubricity additives, combustion improvers and mixtures thereof.

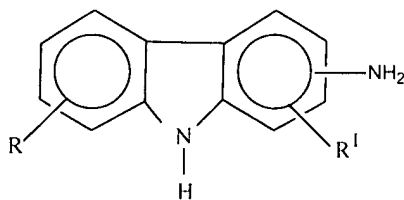
21. A method for improving the fuel economy of a diesel engine which comprises operating the diesel engine with a fuel composition comprising (a) a major amount of a diesel fuel and (b) a minor fuel economy improving effective amount of a soot dispersant additive which is a copolymer of ethylene and a C<sub>3</sub> - C<sub>10</sub> alpha-monoolefin having a number average molecular weight ranging from about 5,500 to about 60,000 on which has been grafted an ethylenically unsaturated carboxylic acid and/or anhydride thereof in the ratio of at least about 1.8 molecules of carboxylic acid functions per molecule of said copolymer which is then further derivatized with at least one amino-aromatic polyamine compound selected from the group consisting of:

(a) N-arylphenylenediamine of the formula:



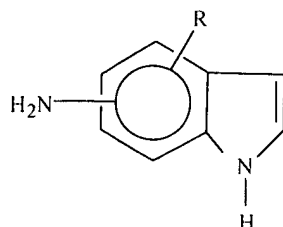
wherein Ar is aromatic and R<sup>1</sup> is H or -NHaryl, -NHarylalkyl, a branched or straight chain radical having from 4 to about 24 carbon atoms that can be alkyl, alkenyl, alkoxy, aralkyl alkaryl, hydroxyalkyl or aminoalkyl; R<sup>2</sup> is -NH<sub>2</sub>, -[NH(CH<sub>2</sub>)<sub>n</sub>]<sub>m</sub>-NH<sub>2</sub>, -CH<sub>2</sub>-(CH<sub>2</sub>)<sub>n</sub>-NH<sub>2</sub>, -CH<sub>2</sub>-aryl-NH<sub>2</sub>-aryl-NH<sub>2</sub> in which n and m each independently has a value of from 1 to about 10; and, R<sup>3</sup> is H or an alkyl, alkenyl, alkoxy, aralkyl or alkaryl radical having from 4 to about 24 carbon atoms,

(b) aminocarbazole of the formula:



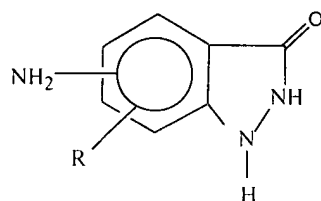
wherein R and R<sup>1</sup> each independently represents H or an alkyl or alkenyl radical having from 1 to about 14 carbon atoms,

(c) aminoindole of the formula:



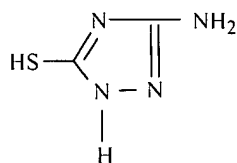
5 wherein R represents H or an alkyl radical having from 1 to about 14 atoms,

(d) amino-indazolinone of the formula:



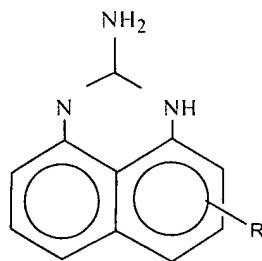
wherein R is H or an alkyl radical having from 1 to about 14 carbon atoms,

(e) aminomercaptotriazole of the formula:



10 , and

(f) aminoperimidine of the formula:



wherein R represents H or an alkyl radical having from 1 to about 14 atoms.

22. The method of Claim 21, wherein the copolymer is obtained by copolymerizing ethylene, C<sub>3</sub>-C<sub>10</sub> alpha-monolefin and at least one member selected from the group consisting of nonconjugated diene and nonconjugated triene.

5           23. The method of Claim 21, wherein the C<sub>3</sub>-C<sub>10</sub> alpha-monolefin is propylene.

24. The method of Claim 23, wherein the ethylenically unsaturated carboxylic acid anhydride is maleic anhydride.

10           25. The method of Claim 21, wherein the at least one amino-aromatic polyamine compound is an N-arylphenylenediamine.

26. The method of Claim 25, wherein the N-arylphenylenediamine is N-phenyl-p-phenylenediamine.

15

27. The method of Claim 21, wherein the number average molecular weight of the copolymer is from about 6,000 to about 20,000.

28. The method of Claim 21, wherein the number average molecular weight of  
20 the copolymer is from about 7,000 to about 15,000.



29. The method of Claim 21, wherein the amino-aromatic polyamine compound is reacted with the copolymer containing the grafted carboxylic acid function in a ratio of about 0.5:1 to about 1.1:1 molar equivalence of amino-aromatic polyamine compound to copolymer containing the grafted carboxylic acid function.

5

30. The method of Claim 21, wherein the amino-aromatic polyamine compound is reacted with the copolymer containing the grafted carboxylic acid function in a ratio of about 0.9:1 to about 1:1 molar equivalence of amino-aromatic polyamine compound to copolymer containing the grafted carboxylic acid function.

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31. The method of Claim 21, wherein the copolymer is obtained by copolymerizing ethylene and propylene, the copolymer is grafted with maleic anhydride to provide carboxylic acid function and the grafted copolymer is reacted with N-phenyl-p-phenylenediamine.

15

32. The method of Claim 21, wherein the minor fuel economy improving effective amount of the soot dispersant additive is about 50 ppm to about 5,000 ppm.

33. The method of Claim 21 wherein the minor fuel economy improving effective amount of the soot dispersant additive is about 100 to about 2,000 ppm.

20

34. The method of Claim 21, wherein at least one other diesel fuel additive is added to the diesel fuel.

35. The method of Claim 34, wherein the at least one other diesel fuel additive is selected from the group consisting of other soot dispersant additives, detergents, cetane improvers, antioxidants, carrier fluids, metal deactivators, dyes, markers, corrosion inhibitors, biocides, antistatic additives, drag reducing agents, demulsifiers, dehazers, anti-icing additives, lubricity additives, combustion improvers and mixtures thereof.